SONY

3-754-780-22(2)

Stereo Cassette Deck

Operating Instructions

TC-WR690/WR790

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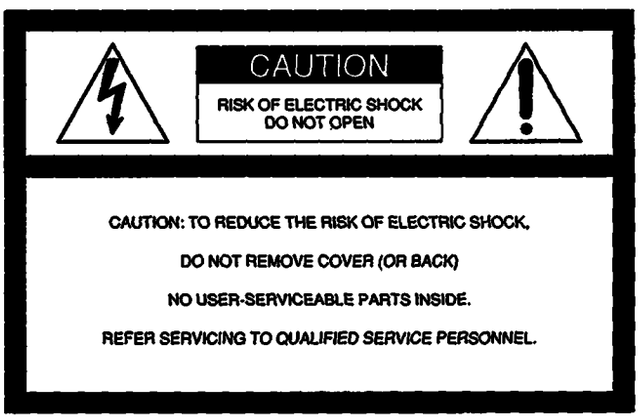
WARNING

Owner's Record

The model and serial numbers are located at the rear. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. _____ Serial No. _____

To prevent fire or shock hazard, do not expose the unit to rain or moisture.


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK)
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

* The graphical symbols are on the rear enclosure.

INFORMATION

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

— Reorient or relocate the receiving antenna.
— Increase the separation between the equipment and receiver.
— Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
— Consult the dealer or an experienced radio/TV technician for help.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

For the customers in U.K.
IMPORTANT
The wires in this mains lead are coloured in accordance with the following code:
Blue: Neutral
Brown: Live
As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:
The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.
Do not connect either wire to the earth terminal in the plug which is marked by the letter E or by the safety earth symbol ⏚ or coloured green or green-and-yellow.

Table of Contents

Chapter 1 Getting Started
Features 3
Precautions 4
Unpacking 4
Checking the supplied accessories 4
Notes on installation 4
Checking the operating voltage 4
Hooking up the system 5
Before you begin 5
Hook-up example 5
Identifying the parts 6
Front panel 6

Chapter 2 Playback
Playing back 7
Playing back both decks in succession — Relay Play 8
Playing back automatically after rewinding — Auto Play 9
Locating a selection
— Multi-AMS (Automatic Music Sensor) 10
Locating a desired position using the counter
— Memory Play 11

Chapter 3 Recording
Recording 12
How to record to a cassette 12
The accuracy of the digital counter 13
Adjusting the recording level 13
To protect a recording 14
What is the Dolby HX PRO system? 14
Recording the same source on both decks
— Simultaneous Recording 15
Recording on both decks in succession
— Relay Recording 16
Inserting a blank space during recording
— Record Muting 17

Chapter 4 Other Operations
Dubbing a tape 18
Dubbing only desired portions 19

Chapter 5 Additional Information
Maintenance 20
Cleaning the heads and tape path 20
Demagnetizing the heads 20
Cleaning the cabinet 20
Specifications 21
Troubleshooting guide 22

Features

For higher quality recording/playback
- **The Dolby HX PRO* system** which improves the linearity of the tape's high-range response during recording.
- **B and C type Dolby NR* systems** which reduce tape noise.
- **Independent B and C type Dolby NR* systems on each deck** which allow the free selection of Dolby systems on each deck during Simultaneous Recording, Relay Recording, or normal-speed dubbing (TC-WR790 only).

For your convenience
- **Automatic tape type detection** during playback and recording.
- **The Multi-AMS and Memory Play functions** which provide easy access to a desired selection.
- **A relay function** for long recording and playback.
- **Synchronized dubbing** at normal or high speed.
- **Simultaneous Recording function** for the simultaneous recording of the same source to cassettes in both decks.
- **A dubbing level control** which allows the dubbing volume level to be varied during normal-speed dubbing (TC-WR790 only).

For easier operation
- **Twin easy-to read digital counters** which show the elapsed recording or playing time on each deck.

* Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen.
"DOLBY", the double-D symbol ⧈ and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

Differences between the models

This instruction manual covers the TC-WR690 and TC-WR790. The TC-WR790 has the following features which are not in the TC-WR690.
- Independent B and C type Dolby NR* systems on each deck
- A dubbing level control

Note: All illustrations in this manual show the TC-WR790.

Precautions

On safety
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it will not be used for a long time. To disconnect the cord, pull it out by grasping the plug. Never pull the cord itself.
- The unit is not disconnected from the ac power source (mains) as long as it is connected to the wall outlet, even if the unit itself has been turned off.

On operation
- When the unit is not used, turn the power off to conserve energy and to extend the useful life of your unit.
- Because of a safety mechanism, the function buttons will not operate if the cassette holder is not completely closed, if there is no cassette in the cassette holder, or if a cassette has been incorrectly inserted into the cassette holder.

On head cleaning
The head and tape path should be cleaned after every ten hours of operation. Dirty heads and a dirty tape path may cause:
- — loss of high-frequency response
- — loss of sound volume
- — sound drop-out

If you have any questions or problems concerning your unit, please contact your nearest Sony dealer.

For the customers in the U. S. A.
For detailed safety precautions, see the leaflet "IMPORTANT SAFEGUARDS".

Unpacking

Checking the Supplied Accessories

Make sure that the following supplied accessories are included with your unit.
- Audio connecting cords (2)

Notes on Installation

- Place the unit with the front panel facing you in a location with adequate air circulation to prevent overheating of the unit.
- Do not place the unit:
  - — near heat sources such as radiators or air ducts.
  - — in places subject to direct sunlight, excessive dust, mechanical vibration or shock.
  - — in an inclined position.
  - — on a rug or other soft surfaces that would block the ventilation holes on the bottom of the unit.

Do not throw away the carton and the packing material
They will come in handy when transporting the unit or shipping it for servicing.

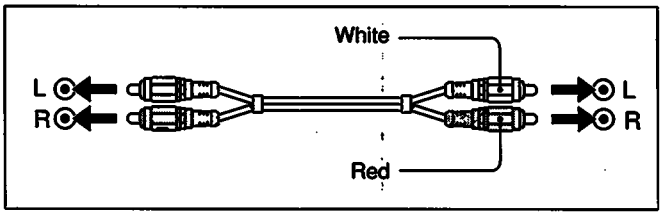
Checking the Operating Voltage

- Operate the unit only on 120 V AC, 60 Hz (U.S.A. model) or 240 V AC, 50 Hz (U.K. model).
- Before operating the unit, be sure that the operating voltage of your unit is identical with that of your local power supply.

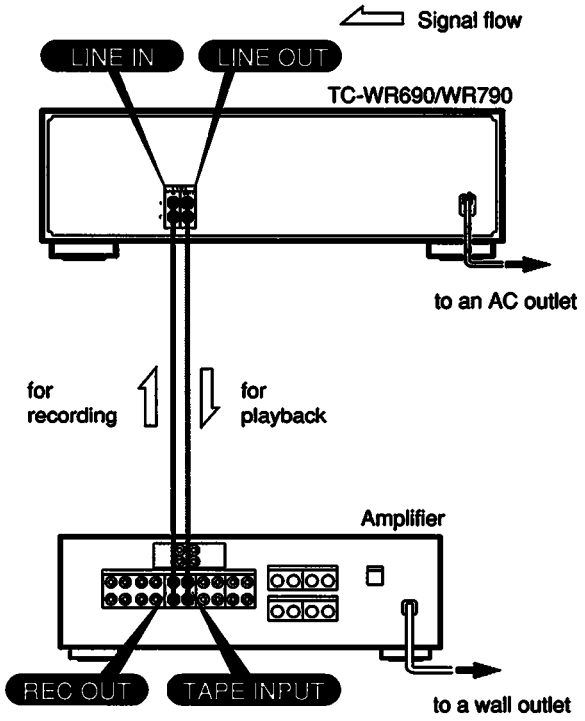
Hooking Up the System

Before You Begin

- Turn off the power to all equipment to be connected before making any connection.
- Note that the red plug of the supplied connecting cord is for right-channel (R) connection and the white plug for left-channel (L) connection.
- The connecting cords should be fully inserted into the jacks. A loose connection may cause hum pickup.

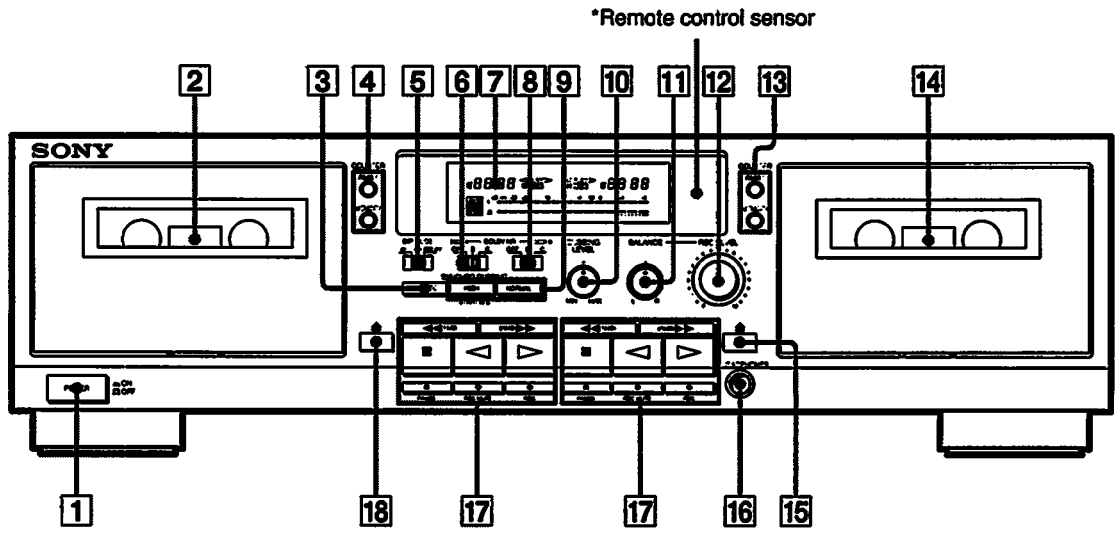


Hook-up Example



Identifying the Parts

Front Panel



(The illustration shows the TC-WR790.)

For details, refer to the page number indicated in parenthesis.

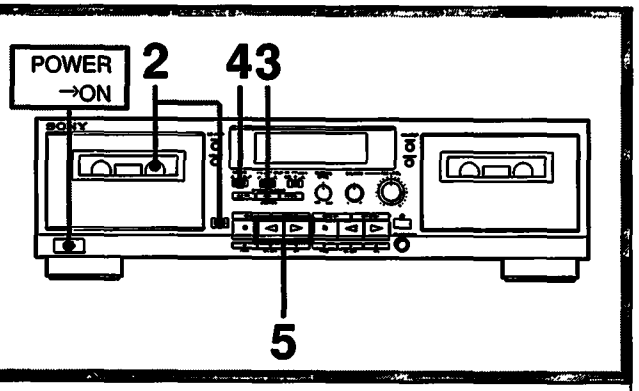
1 **POWER switch**
2 **Deck A**
3 **A+B REC (simultaneous recording) button (page 15)**
4 **COUNTER buttons (deck A) (page 11)**
RESET button
MEMORY button
5 **DIR (direction) MODE switch (pages 7, 8, 12, 15, 16 and 18)**
6 **DOLBY NR (Dolby noise reduction) switch (TC-WR790: for deck A only; TC-WR690: for decks A and B) (pages 7, 8, 12, 15, 16 and 18)**
7 **Display panel**
8 **DOLBY NR (Dolby noise reduction) switch (deck B) (TC-WR790 only) (pages 7, 8, 12, 15, 16 and 18)**
9 **SYNCHRO DUBBING buttons (page 18)**
HIGH speed button
NORMAL speed button
10 **DUBBING LEVEL control (TC-WR790 only) (page 18)**
11 **BALANCE control (page 12)**
12 **REC (recording) LEVEL control (pages 12 and 13)**
13 **COUNTER buttons (deck B) (page 11)**
RESET button
MEMORY button
14 **Deck B**
15 **⏏ (eject) button (deck B)**
16 **HEADPHONES jack (stereo phone jack)**
17 **Tape operation buttons**
◀◀ (leftward fast winding) (Multi-AMS) button**
▶▶ (rightward fast winding) (Multi-AMS) button**
■ (stop) button
◀ (reverse play) button
▶ (forward play) button
II PAUSE button
○ REC MUTE (record muting) button (page 17)
● REC (recording) button
18 **⏏ (eject) button (deck A)**

***Remote control sensor**
You can remotely control this cassette deck with:
— A remote commander that came with a Sony amplifier or receiver if it has the ■ mark and cassette deck control capability.
— Any optional Sony remote commander with the ■ mark and cassette deck control capability.

****AMS is an abbreviation for Automatic Music Sensor.

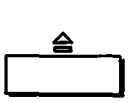
Playing Back

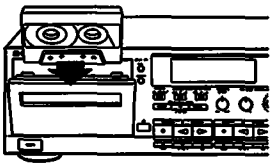
Follow the procedure below to play back a cassette on deck A or B.



1 **Turn on the amplifier and select the tape function.**

2 **Insert a cassette.**





3 **Set DOLBY NR on the respective deck(s) to the same position that was used when the cassette was recorded.**

4 **Set DIR MODE.**

To play back to the end of one side only	
To play back both sides continuously*	

* After playing back five times, the deck automatically stops.

5 **Press ◄ or ► to start playback.**

To play back **from the front side**, press ►.

To play back **from the reverse side**, press ◄.

The tape direction lights up to show the side you are listening.

To stop playback, press the ■ button.
To stop playback momentarily, press the ❚❚ button.
To restart play, press the ❚❚, ◄ or ► button.
To fastwind a tape rightward, press the ►► button in stop mode.
To fastwind a tape leftward, press the ◄◄ button in stop mode.

Is it necessary to set the tape type being used?
No. The deck has an automatic tape type detection system.

To change to recording mode during playback
Keeping the ◄ or ► button pressed, press the ● button.
The unit immediately switches from playback to recording without stopping the tape. This is useful when editing previously recorded material.

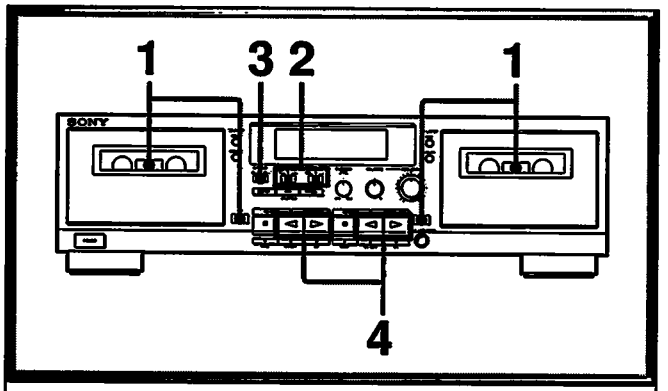
When decks A and B are in playback mode
Only playback from deck A will be audible.

What is the Dolby NR system?
The Dolby NR (noise reduction) system reduces tape hiss noise in low-level, high-frequency signals by boosting the signals during recording and lowering them during playback.

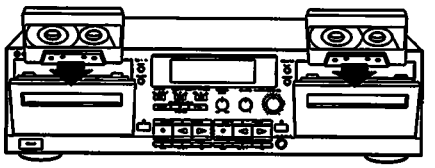
Note
The Dolby HX PRO system is effective only during recording, not during playback.

Playing Back Both Decks in Succession — Relay Play

The Relay Play function plays back cassettes in deck A and deck B continuously and in consecutive order.



1 **Insert cassettes into both decks.**



2 **Set DOLBY NR on both decks (TC-WR790 only).**

3 **Set DIR MODE to RELAY.**

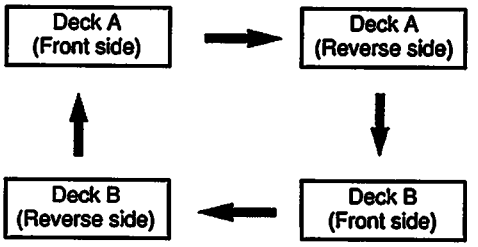
4 **Press ◄ or ► to start playback of the cassette to be listened to first.**

To play back **from the front side**, press ►.

To play back **from the reverse side**, press ◄.

To stop Relay Play
Press the ■ button of the deck playing.

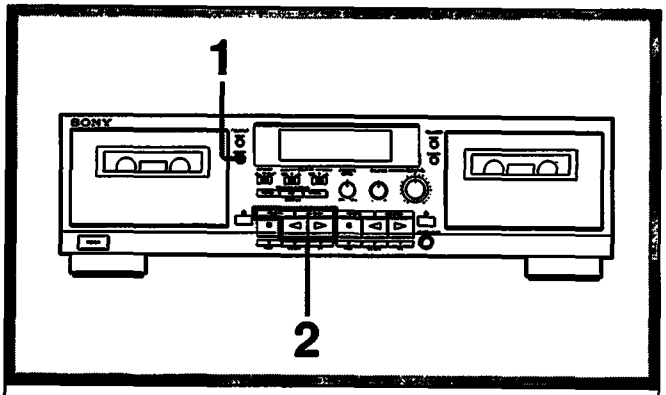
Playback sequence of Relay Play
Relay Play always follows the sequence below regardless of where playback starts.
After playing back five times, Relay Play automatically stops.



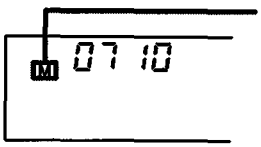
Playing back more than two cassettes in succession
Replacing cassettes that have finished playing with new ones allows you to play back two or more cassettes alternately on each deck.

Playing Back Automatically After Rewinding — Auto Play

The Auto Play function automatically starts playing back a cassette after fast winding it to the beginning.

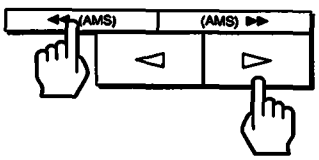


1 **Make sure the MEMORY indicator of the deck to be used is off.**



If the indicator is on, press MEMORY.

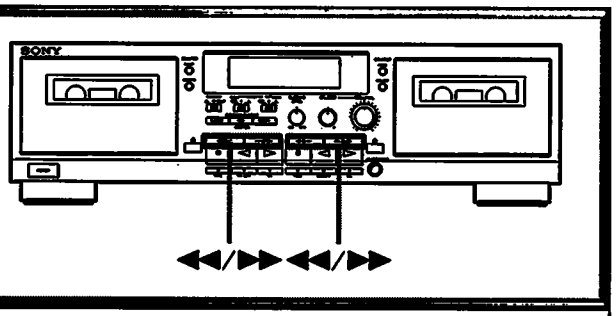
2 **While pressing ► or ◄, press ◄◄ or ►►.**



From the beginning of...	While pressing...
front side	►, press ◄◄.
reverse side	◄, press ►►.

Locating a Selection — Multi-AMS (Automatic Music Sensor)

By detecting the blank space between selections, the Multi-AMS function allows you to skip up to 30 selections during fast forwarding or reversing to locate the beginning of a selection.



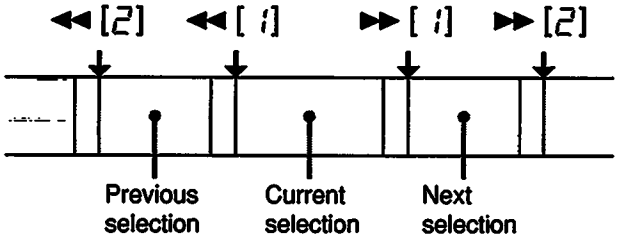
During playback, press ◀◀ or ▶▶ as many times as the number of selections to be skipped.

Playback direction indicator	To locate a selection after the current one	To locate a selection before the current one*
▷	▶▶	◀◀
◁	◀◀	▶▶

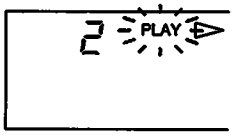
* Pressing ◀◀ or ▶▶ once locates the beginning of the current selection.

Tape direction indicator : ▷

↓ : Beginning of selection



- The number of selections to be skipped, which replaces the counter indication, decreases by one each time a blank space is detected.
- The PLAY indicator flashes during Multi-AMS operation.
- When the beginning of the desired selection is reached, the counter indication returns and playback automatically restarts.



Modifying the indicated number of selections to be skipped

The number of selections to be skipped may be modified by pressing the ◀◀ or ▶▶ button at any time, even during Multi-AMS operation.

Regarding changes in the indicated number

The indicated number of selections to be skipped may change even as it is being set due to the detection of blank spaces during fastwinding of the unit.

The Multi-AMS may skip a selection in the following cases:

- If the ▶▶ (or ◀◀) button is pressed immediately before the following selection.
- If there is noise in the space between selections.
- If the space is less than four seconds long.

The Multi-AMS will treat the following as blanks:

- a long pause in the music
- a passage of low frequencies or very low volume
- a gradual increase or decrease in volume

The Multi-AMS does not function on both decks simultaneously

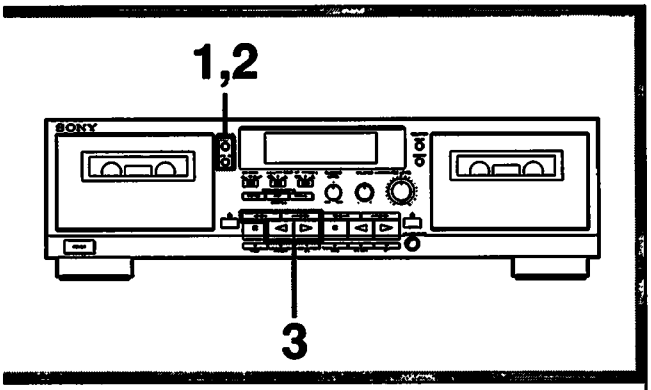
The multi-AMS functions only on the deck whose sound is currently audible.

Note:

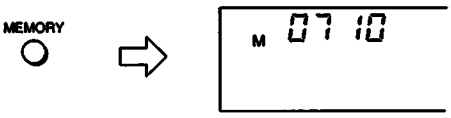
Even if the DIR MODE switch is set to ⇨, the Multi-AMS function does not extend to the other side, but stops when the first side comes to an end.

Locating a Desired Position Using the Counter — Memory Play

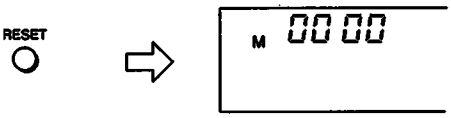
'he Memory Play function allows you to use the counter to record a desired position n a cassette for fast relocation and automatic playback later.



1 **Press MEMORY to activate the Memory Play function of the deck to be used.**



2 **Press RESET to reset the counter at the desired position.**
The desired position is memorized.



3 **To return to the desired position**
Check the direction indicator and press the respective buttons shown below.

Direction Indicator	While pressing...
▷ PLAY	►, press ◄◄.
◁ PLAY	◄, press ►►.

Returning to the memorized position in stop mode — Memory stop
If you press only the ◄◄ or ►► button when the MEMORY indicator is on in the stop mode, the tape rewinds and the unit stops when the counter reaches 0000.
Be sure to first stop playback before activating the Memory Stop function, otherwise the Multi-AMS function will activate.

To deactivate the Memory Play function
Press the MEMORY button, turning off the MEMORY indicator.

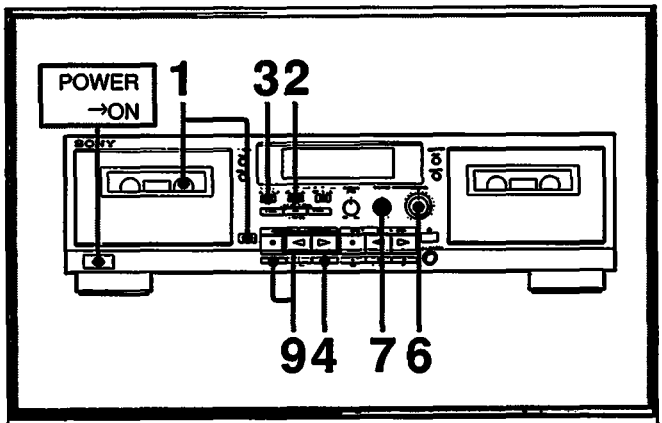
Note on Memory Play/Stop
In actuality, the tape is rewound to slightly short of 0000.

Do not turn off the power while using the counter
Turning the power off, then on again resets both counters to 0000.

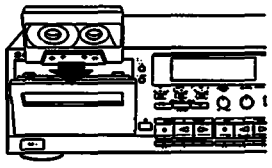
Recording

How to Record to a Cassette

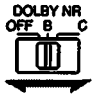
Follow this procedure to record a source on a cassette in deck A or deck B.



1 **Insert a cassette.**



2 **Select DOLBY NR on the respective deck(s).**



3 **Set DIR MODE.**

To record on one side	
To record on both sides	

Note
Even at the ⇨ position, recording automatically stops when the tape reaches the end of the reverse side.

4 **Press ● of the deck to be used to enter the recording pause mode.**

Note
The direction indicator for the side opposite the specified one will flash for three seconds to indicate that recording is possible on that side also. If, however, the tab for that side has been removed to prevent recording, the indicator will not flash.
If the tab has been removed from either side A or B, recording is impossible on the side(s).
To record a cassette for recording, cover the respective slot with tape. See "To Protect a Recording" on page 14.

5 **Play the program source to be recorded.**

6 **Turn REC LEVEL to adjust the recording level.**

See "Adjusting the Recording Level" on page 13.

7 **Turn BALANCE to adjust the balance.**

8 **Restart the program source, if required.**

9 **Press ❚❚, ◄ or ► to start recording.**

To record on the front side of the cassette	
When ▷ is on	Press ► once or ❚❚.
When ◁ is on	Press ► twice.

To record on the reverse side of the cassette	
When ◁ is on	Press ◄ once or ❚❚.
When ▷ is on	Press ◄ twice.

Note
Pressing the ◄ or ► button twice will cause the unit first to change tape direction and then start recording in that direction.

To stop recording
Press the ■ button.

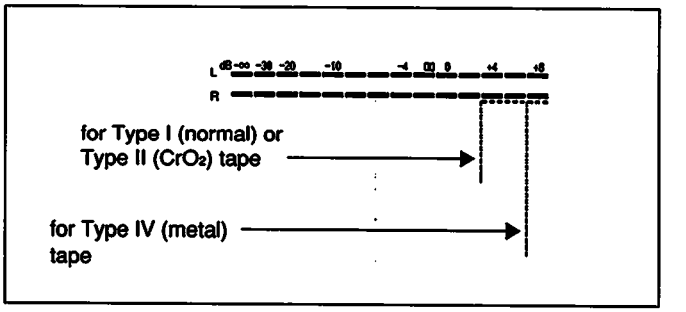
The Accuracy of the Digital Counter

Since the counter is not a digital clock, the number will differ from the actual elapsed playback or recording time by a few minutes, depending on such factors as tape length and hub size.
When decks A and B are operated at the same time, slight differences in tape length (even in the case of identical tape types) and running speeds will result in a difference of a few minutes between both counters.

Adjusting the Recording Level

The optimum recording level, which differs according to the tape type, is indicated on the PEAK LEVEL METER for each tape type.
Adjust the REC LEVEL control as high as possible without exceeding the recommended range for the tape type being used.

PEAK LEVEL METER readings by tape type
Recommended maximum PEAK LEVEL METER readings.

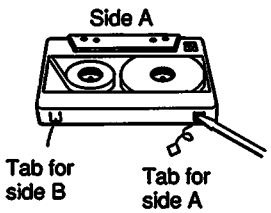


Tips on recording level adjustment
- If the recording level setting is too high, the recording will be distorted; if it is too low, the tape will produce a hissing sound. Therefore, the recording level should be set as high as possible without causing distortion.
- If the program source to be recorded has many high frequency signals, set the level to a relatively low position.

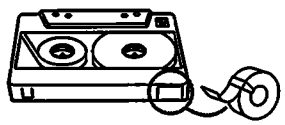
Recording

To Protect a Recording

To protect a recording on side A or B
Break out the respective tab.

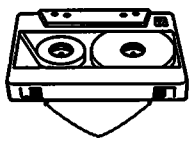


To recover a cassette for recording
Cover the respective slot with tape.

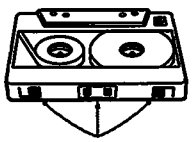


When using Type II (CrO_2) or Type IV (metal) cassettes
Be careful not to cover the detector slots which are necessary for automatic tape type detection.

Type II (CrO_2) cassette and its detector slots



Type IV (metal) cassette and its detector slots



Cassette Care

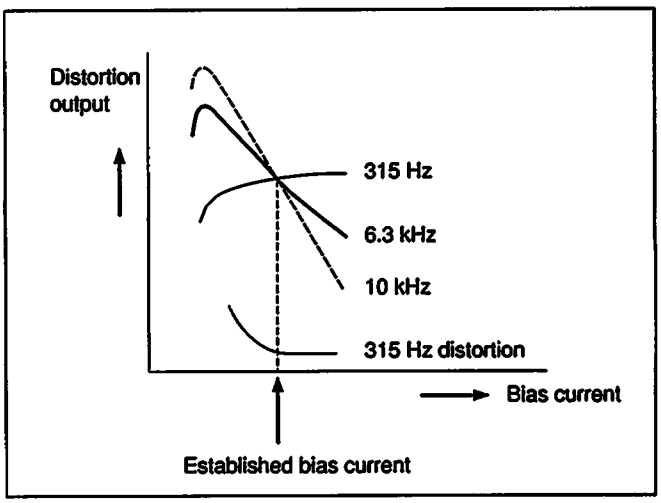
- Avoid touching the tape surface of a cassette to prevent contamination of the heads by dirt, dust, or oil on the skin.
- Keep cassettes away from equipment with magnets, such as speakers and amplifiers, as erasure or distortion of the recorded tape could occur.
- Do not expose cassettes to direct sunlight, extremely cold temperatures, or moisture.

Note on cassettes longer than 90 minutes
The use of cassettes longer than 90 minutes is not recommended except for long continuous playback.

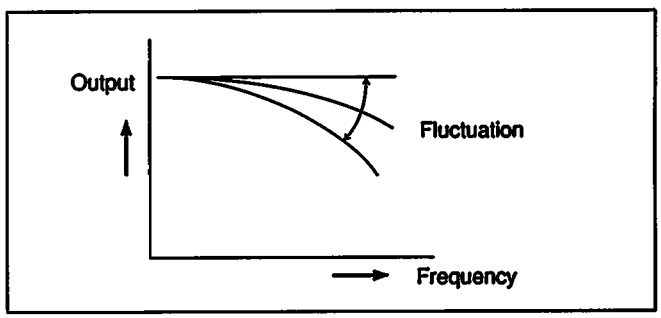
What is the Dolby HX PRO system?

The Dolby HX PRO system provides linearity in high-range frequency response during recording. Tapes recorded with this system retain the same high quality even when played back on other tape decks.

As shown below, characteristics such as output level and distortion differ widely according to the bias (high-frequency) current.



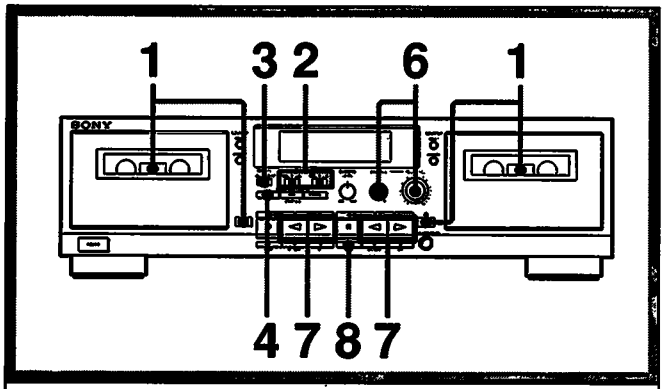
In conventional systems (see diagram below), the bias current is susceptible to variations in certain recording signals which may cause fluctuations in frequency response, distortion, or other unwanted characteristics.



With the Dolby HX PRO system, the effective bias amount added to the bias current is controlled in millisecond units to greatly reduce distortion, improving linearity in high-range response and ensuring high-intensity recording with minimal distortion and noise.

Recording the Same Source on Both Decks — Simultaneous Recording

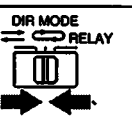
The Simultaneous Recording function allows you to record the same source on cassettes in decks A and B at the same time.



1 **Insert cassettes for recording into both decks.**

2 **Set DOLBY NR on the respective deck(s).**

3 **Set DIR MODE.**

To record on one side	
To record on both sides	

4 **Press A + B REC to place both decks into recording pause mode.**

5 **Play the program source to be recorded.**

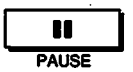
6 **Adjust the recording level and balance. (See pages 12 and 13)**

7 **Select the side from which to start recording.**

To start recording **from the front side,** press ►.

To start recording **from the reverse side,** press ◄.

8 **Press II of the deck B to start recording.**



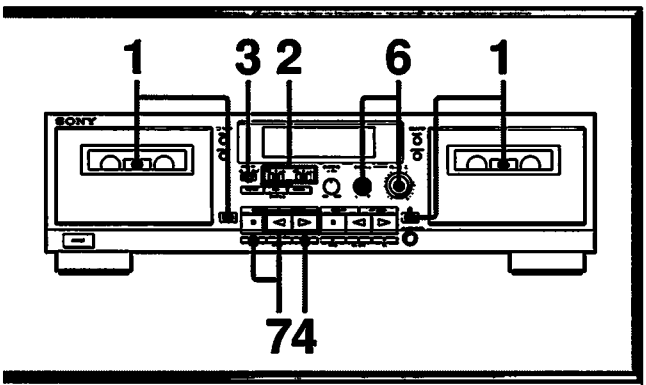
To stop Simultaneous Recording
Press the ■ button on the respective decks.

If the A + B REC indicator flashes three times
A tab is missing for one of the sides selected for recording. Cover the slot with tape (see page 14).

Using the II and O buttons during Simultaneous Recording
Pressing the II or O button on deck B during Simultaneous Recording activates the respective function on both decks at the same time. The II and O buttons on deck A are disabled during Simultaneous Recording.

Recording on Both Decks in Succession — Relay Recording

The Relay Recording function can be used to make a continuous recording that starts on a cassette in deck A and ends on a cassette in deck B.



1 **Insert cassettes for recording into both decks.**

2 **Set DOLBY NR on respective deck(s).**

3 **Set the direction mode to RELAY.**

4 **Press ● to place deck A into recording pause mode.**

5 **Play the program source to be recorded.**

6 **Adjust the recording level and balance.**
(See pages 12 and 13)

7 **Press ❚❚, ◄ or ► on deck A to start recording.**

To record on the front side of the cassette	
When ▷ is on	Press ► once or ❚❚.
When ◁ is on	Press ► twice.

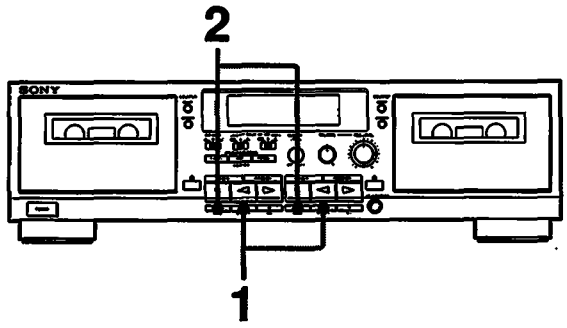
To record on the reverse side of the cassette	
When ◁ is on	Press ◄ once or ❚❚.
When ▷ is on	Press ◄ twice.

To stop Relay Recording
Press the ■ button on the deck which is recording.

Relay Recording on reverse side of the cassette in deck A has finished
Recording continues on deck B in the direction of the current tape direction indicator. When ◁ is on, Relay Recording stops when the reverse side comes to an end.

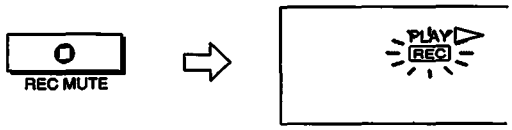
Inserting a Blank Space during Recording — Record Muting

The Record Muting function allows you to insert a four-second blank to enable proper Multi-AMS operation (see page 10), and to replace unwanted input with a blank of any desired length.



1 While recording, press ● and release it immediately.

The REC indicator starts to flash. During this time, no incoming signals are recorded on the tape.
After four seconds, the ❚❚ indicator lights up and the unit enters recording pause mode.

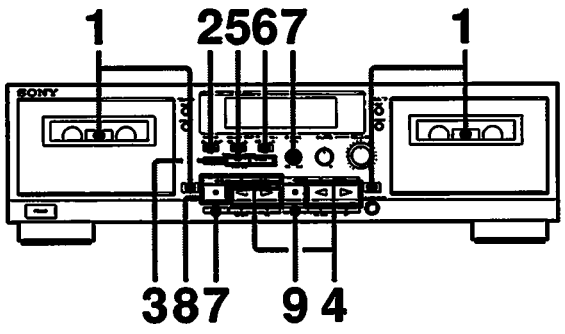


2 Press ❚❚ to resume recording.

To create a blank longer than four seconds
Press the ● button for the desired length of time. After four seconds, the REC indicator flashes with greater rapidity. When you release the ● button, the ❚❚ indicator lights up and the unit goes into recording pause mode.
Press the ❚❚ button to resume recording.

Dubbing a Tape

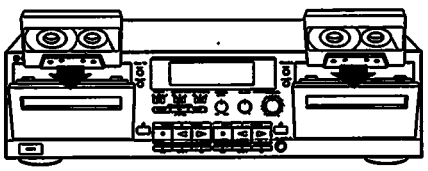
Use the dubbing function to copy a tape in deck A to a tape in deck B. High speed dubbing is convenient for dubbing entire tapes while normal-speed dubbing is handy for tape editing.



1 **Insert cassettes into both tape decks.**

Recorded tape into deck A

Blank tape into deck B



2 **Select the direction mode.**

One side	
Both sides	Dubbing of the reverse side starts independently of deck A.
	Dubbing of the reverse side starts simultaneously with deck A.

3 **Press HIGH or NORMAL to select the dubbing speed.**

4 **Select the side on which to start dubbing.**

To dub **from the front side**, press ►.

To dub **from the reverse side**, press ◄.

The following steps 5 to 8 are for the TC-WR790 only.

For TC-WR690 users: Go to step 9.

5 **Set DOLBY NR on deck A (TC-WR790 only).**

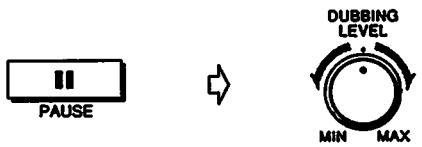
For normal-speed dubbing: Go to step 6.

For high-speed dubbing: Go to step 9.

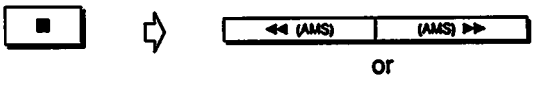
6 **Set DOLBY NR on deck B (TC-WR790 only).**

7 **Press II on deck A to start playback on deck A and adjust the dubbing level by turning the DUBBING LEVEL control (TC-WR790 only).**

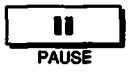
See "Adjusting the Recording Level" on page 13.



8 **Press ■ on deck A to stop playback on deck A and rewind the cassette by pressing the ◄◄ or ►► button (TC-WR790 only).**



9 Press II on deck B to start dubbing.



To stop dubbing
During normal-speed dubbing, press the ■ button on deck B. During high-speed dubbing, press the ■ button on either deck A or B.

During high-speed dubbing
Only the ■ button is operative.

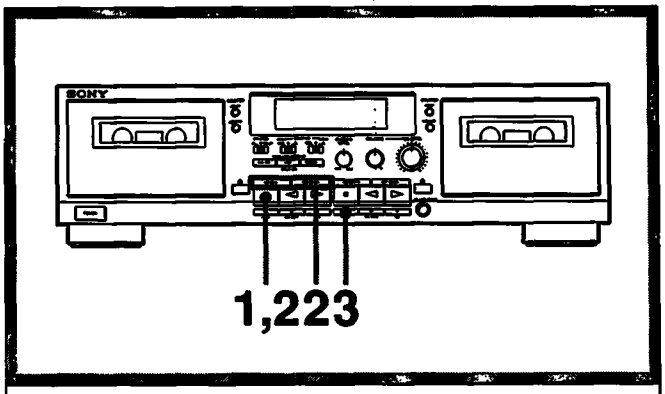
If the NORM or HIGH speed indicator flashes three times
Either one or both tabs of the cassette inserted into deck B have been removed, making dubbing impossible for that side. Cover the slot(s) with tape (see page 14).

When is it necessary to set the Dolby NR system and recording level?
For TC-WR690 users: Only when the sound is monitored during normal-speed dubbing.
For TC-WR790 users: During all recording operations, with the exception of high-speed dubbing.

Notes on tape dubbing
- Do not change the dubbing speed setting during tape dubbing.
- If the sound is affected by the proximity of a television set during high-speed dubbing, turn the television set off or move it away from the deck.

Dubbing Only Desired Portions

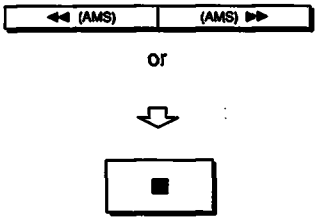
Follow this procedure to dub only desired portions of selections. Note that this is only possible in the normal-speed dubbing mode.



1 Press ■ on deck A at the start of a selection to be skipped:

Deck A enters the stop mode and deck B enters the recording pause mode.

2 Locate the desired portion on deck A.



3 Press II on deck B to resume dubbing.

Maintenance

Cleaning the Heads and Tape Path

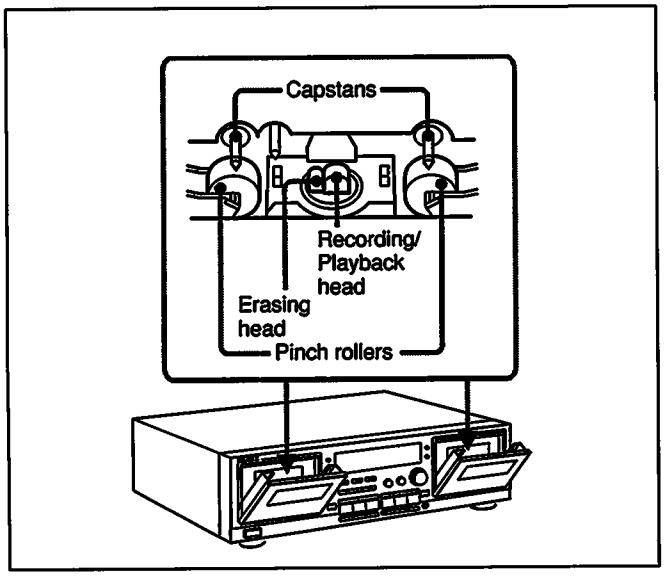
Clean all surfaces over which the tape travels after every ten hours of operation to guard against:
- — low-quality sound
- — a decrease in sound level
- — excessive wow, flutter or drop-out
- — incomplete erasure
- — impairment of recording function

To obtain high-quality recorded sound, cleaning before every recording is recommended.

1 Press ⏏ to open the cassette holder. Grasp the front holder on both sides and gently lift to remove it.

2 With the unit turned off, wipe the heads, the pinch rollers and the capstans with a cotton swab slightly moistened with alcohol or a commercially available cleaning fluid for tape decks.

3 Replace the cassette holder.



Do not insert a cassette until the cleaned areas are completely dry.

Demagnetizing the Heads

After 20 to 30 hours of use, or when you notice hiss and/or loss of high frequencies, the residual magnetism built up on the heads should be removed.

1 Turn off the power.

2 Demagnetize the heads with any commercially available demagnetizer.
Refer to the instruction manual of the demagnetizer for detailed instructions.

Cleaning the Cabinet

Clean the cabinet, panel and controls with a soft cloth slightly moistened with a mild detergent solution.
Do not use any type of abrasive pad, scouring powder or solvents such as alcohol or benzine.

Specifications

Recording system 4-track 2-channel stereo
Fast winding time Approx. 90 sec. (with Sony C-60 cassette)
Bias AC bias
Signal-to-noise ratio (at peak level)

Cassette (Dolby NR OFF)	Type IV (Sony Metal-Select/S)	Type II (Sony UX-S)	Type I (Sony HF-S)
	58 dB	57 dB	55 dB

Measured at peak level weighted without NR. The S/N is improved by about 15 dB at 500 Hz and by about 20 dB about 1 kHz with Dolby-C NR on, and by 5 dB at 1 kHz and by 10 dB about 5 kHz with Dolby-B NR on.

Harmonic distortion
0.4% (with Sony Type I, 160 nWb/m, 315 Hz, 3rd H.D.)
1.8% (with Sony Type IV, 250 nWb/m, 315 Hz, 3rd H.D.)

Frequency response (DOLBY NR OFF)

Cassette / Model	Type IV cassette (Sony Metal-Select/S)	Type II cassette (Sony UX-S)	Type I cassette (Sony HF-S)
TC-WR 690	30 - 18,000 Hz (±3 dB, IEC) 30 - 13,000 Hz [±3 dB (-4 dB) recording]	30 - 17,000 Hz (±3 dB, IEC)	30 - 15,000 Hz (±3 dB, IEC)
TC-WR 790	30 - 19,000 Hz (±3 dB,IEC) 30 - 13,000 Hz [±3 dB (-4dB) recording]	30 - 18,000 Hz (±3 dB, IEC)	30 - 16,000 Hz (±3 dB, IEC)

Wow and flutter ±0.13% W.Peak (IEC)
0.07% W.RMS (NAB)
±0.18% W.Peak (DIN)

Inputs

Line inputs (phono jacks)	Sensitivity	0.16 V
	Input impedance	47 kilohms

Outputs

Line outputs (phono jacks)	Rated output level	0.5 V at a load impedance of 47 kilohms
	Load impedance	Over 10 kilohms
Headphones (stereo phone jack)	Output level	1 mW at a load impedance of 32 ohms

General
Power requirements Model for U.S.A.:
120 V AC, 60 Hz
Model for the United Kingdom:
240 V AC (or 220 V AC adjustable by Sony personnel), 50/60 Hz

Power consumption 30 W
Dimensions Approx. 430 × 123 × 285 mm (w/h/d)
(17 × 4⅞ × 11¼ inches) including projecting parts and controls
Weight Approx. 4.5 kg (9 lbs 15 oz) (TC-WR690)
Approx. 4.6 kg (10 lbs 3 oz) (TC-WR790)

Supplied accessories
Audio connecting cords (2)

Design and specifications are subject to change without notice.

Note
This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

Troubleshooting Guide

The following trouble checks will help you correct the most common problems encountered with your tape deck. Should any problems persist after you have made these checks, consult your nearest Sony dealer.

Before proceeding with these trouble checks, verify that:
- The power cord is firmly connected.
- Amplifier connections are firmly made.
- Heads, capstans and pinch rollers are clean.
- The amplifier controls and switches are set correctly.

Function Buttons and Tape Transport Problems

Symptom	Cause	Remedy
The function buttons do not activate.	The cassette holder is not fully closed.	Close the holder completely.
	The cassette is not properly inserted.	Insert cassette correctly.
	Button was pressed immediately after power was turned on.	Wait until the ▮▮ indicator stops flashing.
The ● button does not activate.	There is no cassette in the holder.	Insert a cassette.
	A tab has been removed from the cassette.	Cover the slot with tape (page 14).
Automatic shut-off mechanism activates before the tape comes to its end.	The tape is slack.	Take up the tape slack.
	The cassette shell is deformed.	Use another cassette.
	The Memory Play function is activated.	Press the MEMORY button to deactivate the function.
Excessively loud tape transport noise during fast winding.	This noise is caused by the cassette and does not signify a mechanical problem.	—
The ⏏ button does not function.	This occurs when the unit is playing back or recording.	Press the ■ or ▮▮ button to stop playing back or recording first.

Recording and Playback Problems

Symptom	Cause	Remedy
Recording or playback cannot be made or there is a decrease in sound level.	The recording/playback and erasing heads are either dirty or magnetized.	Clean or demagnetize the heads.
	Improper connection.	Make connections properly (page 5).
	Improper setting of the amplifier controls.	Set the amplifier controls to the appropriate positions
Excessive wow, flutter or dropout.	The head, capstan or pinch roller is dirty.	Clean in accordance with instructions (page 20).
Incomplete erasure.	The erasing head is dirty.	Clean the erasing head.
Increased noise or poor reproduction in high frequencies.	The head is magnetized.	Demagnetize the head.
Unbalanced tone in high frequencies.	Improper setting of the DOLBY NR switch.	During playing back,set the switch to the same position used in recording.
	The unit is placed near a television set.	Move the deck away from the television set.
The desired selection cannot be located even if you activate the Multi-AMS.	There is noise in the space between selections.	Rerecord the tape if you can, and insert a blank space of four seconds using the ○ button.
	The space is less than four seconds long.	
	The ▶▶ (or ◀◀) button was pressed immediately before the beginning of the following selection.	—
Playback begins in the middle of a selection when the Multi-AMS function is activated.	The selection contains one of the following: — a long pause in the music — a passage of low frequencies or very low volume — a gradual increase or decrease in volume	While the tape is playing, press the ◀◀ or ▶▶ button again.

Noise

Symptom	Cause	Remedy
Hum noise.	The unit is stacked on or under the amplifier.	Separate the unit.
Noise is recorded.	The recording was made near equipment such as a television set or a color monitor, and interference has affected the recording on the tape and the Dolby NR system.	Move the unit away from the television set or color monitor.